VLAP CHEMICAL PARAMETER EXPLANTIONS

pH

Definition: pH is measured on a logarithmic scale of 0 to 14. Lake pH is important to the survival and reproduction of fish and other aquatic life. A pH below 5.5 severely limits the growth and reproduction of fish.

pH (units)	Category
<5	Acidified
5.0-5.4	Critical
5.5-6.0	Endangered
6.1-8.0	Satisfactory

ACID NEUTRALIZING CAPACITY (ANC)

Definition: Buffering capacity or Acid Neutralizing Capacity (ANC) describes the ability of a solution to resist changes in pH by neutralizing the acidic input to the lake. Historically, the waters of NH have had low ANC because of the prevalence of granite bedrock. The relatively low ANC values means that NH surface waters are vulnerable to the effects of acid precipitation.

ANC (mg/l as $CaCO_3$)	Category
<0	Acidified
0-2	Critical
2-5	Endangered
5-10	Highly Sensitive
10-20	Sensitive
>20	Not Sensitive

TURBIDITY

Definition: Turbidity in the water is caused by suspended matter (such as clay, silt, and algae) that cause light to be scattered and absorbed, not transmitted in straight lines through water. High turbidity readings are often found in water adjacent to construction sites. Also, improper sampling techniques (such as hitting the bottom sediments or sampling streams with little flow) may also cause high turbidity readings. The Class B standard for a water quality violation is 10 NTU's over the lake background level.

Statistical Summary of Turbidity Values for NH Lakes and Ponds

Turbidity (NTU's)	Category
<0.1	Minimum
22.0	Maximum
1.0	Median

TOTAL PHOSPHORUS

Definition: Phosphorus is the most important water quality parameter measured in our lakes. It is the nutrient that limits the algae's ability to grow and reproduce. Phosphorus sources around a lake typically include septic systems, animal waste, lawn fertilizer, road and construction erosion, and natural wetlands.

Total Phosphorus (TP) Ranges for New Hampshire Lakes and Ponds

TP (ug/l)	Category
1-10	Low (good)
11-20	Average
21-40	High
>40	Excessive

CONDUCTIVITY

Definition: Conductivity is the numerical expression of the ability of water to carry an electrical current. It is determined by the number of ionic particles present. The soft waters of New Hampshire have traditionally had low conductivity values. High conductivity may indicate pollution from such sources as road salting, faulty septic systems, or urban/agriculture runoff.

> *Note: Specific categories of good and bad levels can not be constructed for conductivity, because variations in watershed geology can result in natural fluctuations in conductivity. However, values in NH lakes exceeding 100 umhos/cm generally indicate cultural (man-made) pollutants.*

BACTERIA (*E. COLI*)

Definition: *E. coli* is a normal component of the large intestines in humans and other warm-blooded animals. *E.coli* is used as an indicator organism for bacteriological monitoring because it is easily cultured and its presence in the water in defined amounts indicates that sewage MAY be present. If sewage is present in the water, potentially harmful pathogens may also be present.

> The new state standards for Class B waters specify that no more than 406 *E.coli counts* /100mL, or a geometric mean based on at least 3 samples obtained over a 60-day period be greater than 126 *E.coli counts*/100mL. For designated beach areas, more stringent standards apply: 88 *E. coli counts*/100 mL in any one sample, or a geometric mean of 3 samples over 60 days of 47 *E. coli counts*/100 mL.

VLAP BIOLOGICAL PARAMETER EXPLANTIONS

CHLOROPHYLL-A

Definition: NHVLAP uses the measure of chlorophyll-a, a pigment found in plants, as an indicator of the alga abundance. Because algae is a plant and contains chlorophyll-a, the concentration of chlorophyll-a found in the water gives us an estimation of the concentration of algae.

Chlorophyll-a	Category
0-5 ug/l	Good
5.1 – 15 ug/l	More than desirable
>15 ug/l	Nuisance Amounts

WATER CLARITY (SECCHI-DISK TRANSPARENCY)

Definition: The Secchi-disk is a 20cm disk with alternating black and white quadrants used to measure water clarity (how far a person can see into the water). Transparency, a measure of water clarity, is affected by the amount of algae, color, and particulate matter within a lake.

Water Clarity	Category
<2 m	Poor
2-4.5 m	Good
>4.5 m	Exceptional

Note: Clarity values may vary depending on the maximum depth of the lake/pond. For example, if the maximum depth of the pond is 3 meters, a good clarity reading would be 2-3 meters.

DEFINITION OF UNITS

cts/100ml = Counts per 100 milliliters. Used to measure E.coli.

m = meters. Used to measure secchi-disk depth.

mg/L = milligrams per liter. Used to measure total phosphorus concentrations and acid neutralizing capacity.

NTU's = Nephelometric turbidity measurement. Used to measure turbidity.

ug/L = micrograms per liter. Used to measure chlorophyll-a concentrations.

umhos/cm = micromhos per centimeter. Used to measure conductivity.

PHYTOPLANKTON

(Note: Phytoplankton results may not be included in this monthly summary report since it often takes much longer to analyze phytoplankton samples)

Definition: Microscopic algae floating in the water column. The type of phytoplankton present in a lake can be used as an indicator of general lake quality. An abundance of blue-green algae (such as *Anabaena, Aphanizomenon, Oscillatoria*, or *Microcystis*) may indicate excessive phosphorus concentrations or that the lake ecology is out of balance. Diatoms (such as *Asterionella, Melosira*, and *Tabellaria*) and golden-brown algae (such as *Dinobryon* or *Chrysosphaerella*) are typical of NH's less productive lakes.

Greens

Actinastrum	*Micractinium*	*Spirogyra*
Arthrodesmus	*Mougeotia*	*Staurastrum*
Dictyosphaerium	*Pandorina*	*Stigeoclonium*
Elakotothrix	*Pediastrum*	*Ulothrix*
Eudorina	*Scenedesmus*	
Kirchneriella	*Sphaerocystis*	

Diatoms

Asterionella	*Pleurosigma*	*Surirella*
Cyclotella	*Melosira*	*Synedra*
Fragilaria	*Rhizosolenia*	*Tabellaria*

Dinoflagellates

Ceratium	*Peridinium*	*Gymnodinium*

Blue-greens

Anabaena	*Chroococcus*	*Microcystis*
Aphanizomenon	*Coelosphaerium*	*Lyngbya*
Aphanocapsa	*Gloeotrichia*	*Oscillatoria*

Golden-Browns

Chrysosphaerella	*Mallomonas*	*Synura*
Dinobryon	*Uroglenopsis*	

Phytoplankton populations undergo a natural succession during the growing season. It is natural for diatoms to be the dominant species in the spring, then green algae in the early summer, followed by dominating blue-green algae in the mid to late summer. The plankton samples from your lake might show different dominant species, depending on when the samples were taken.